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NORTH AMERICAN HARPACTICOID COPEPODS  
4. DIAGNOSES OF NEW SPECIES OF FRESH-  
WATER CANTHOCAMPTIDAE AND CLETODIDAE  
(GENUS *HUNTEMANNIA*)

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Diagnoses of new species are presented here so that they may be included in the key to the Harpacticoida in the forthcoming revised edition of Ward and Whipple's Fresh-water Biology. All types are deposited in the United States National Museum.

Grateful acknowledgment is expressed to the various persons who have kindly made collections for me.

FAMILY CANTHOCAMPTIDAE

***Canthocamptus robertcokeri***, new species

*Canthocamptus staphylinoides* Pearse, Davis 1954: 398, Table 3.

*Canthocamptus sinuus* Coker, McKee and Coker 1940: 179, 185.

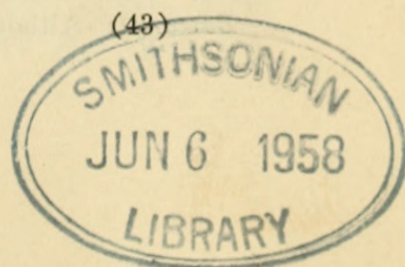
*Specimens examined*: Lake Erie, off Cleveland, Ohio, C. C. Davis, collector: *Type lot*, 51 ♀, 5 ♂, surface tow, Nov. 8, 1956. 3 ♀, 12 M depth, same date. 4 ♀, 1 ♂, May 26, 1951 (published as *C. staphylinoides*, Davis 1954).

North Carolina: 1 ♀, Garner's Lake No. 2, Carteret Co., Jan. 15, 1938, P. McKee, collector (published as *C. sinuus*, McKee and Coker 1940).

Louisiana: 1 ♂, seasonal ditch pond, south of Lebeau, St. Landry Par., Dec. 27, 1951, W. G. Moore, collector. Natchitoches Par., J. E. Sublette, collector: 4 ♀, 3 ♂, ditch pond, 4 miles w. of Natchitoches, Apr. 15, 1956; 2 ♀, swamp pond, 3.7 miles w. of Mora, Mar. 28, 1956; 2 ♀ borrow pit, Red Dirt Game Preserve, Mar. 31, 1956, occurring with *C. assimilis* Kiefer.

Utah: 3 ♀, 1 ♂, Bear Lake, Oct., 1956 and July, 1957, W. J. Clark, collector.

*Diagnosis*: Distal membrane of body segments coarsely serrate to smooth. Anal operculum with 7-9 stout spinules. Caudal ramus of both sexes elongate and narrow, length 4-5 times its own greatest width and about 2 times that of the anal segment (outer margin); with narrow sclerotized ridge on dorsal face; without or with a few spinules on



inner margin. Outer caudal seta extremely slender, subequal to or a little longer than ramus, jointed near base; middle seta very stout, unjointed, about 5 times length of outer seta. Leg 2 of both sexes with 1 inner seta on distal segment or portion of endopod. Leg 4 of female with middle apical seta of endopod slender but longer than outer spine. Leg 3 of male with 2 well developed setae on apex of endopod, the outer about twice the length of endopod. Leg 5 of female with prominent production of mid portion of basal expansion, and gap between setae 3 and 4. Leg 5 of male, exopod segment with 5 setae. Spermatophore flask-shaped. Total body length: ♀ 0.65-0.78 mm. ♂ 0.54-0.62 mm.

*Remarks:* Specimens from Lake Erie, North Carolina and a part of those from Louisiana, have extremely coarse serrations of the distal membrane of the body segments, but some of those from Louisiana and the specimens from Utah have smooth membranes. The presence or absence of spinules on the inner margin of the caudal ramus was not correlated with that of the serrations. All of the males examined had only five setae on the exopod of leg 5, lacking the usual seta at the inner base of the segment. This character, combined with those of the caudal ramus and its setae, and the setation of leg 2, distinguish this from other North American species of *Canthocamptus*.

***Attheyella alaskaensis*, new species**

*Type lot:* 2 ♀, margin of Lake Tikchik, Bristol Bay region of southwestern Alaska (about lat. 60°N., long. 159°W.), Aug. 18, 1954, O. A. Mathisen, collector.

*Diagnosis:* Subgenus *Attheyella*; allied to *A. idahoensis* (Marsh). Body segments coarsely serrate distally. Genital segment divided at middle by complete, heavy sclerotization produced laterally into stout spinous processes like those of segmental divisions. Anal operculum unarmed. Caudal ramus, length greater than anal segment (36:26) and more than twice its own greatest width (36:14); somewhat flattened and broad throughout, the distal part hardly constricted, with rounded apex; heavy sclerotized ridge running nearly entire length of mid dorsal face; distal groups of spinulose hairs on both ventral and dorsal faces; outer marginal setae placed below middle of ramus, not longer than width of ramus; only middle caudal seta well developed and longer than ramus (about 60:36), swollen at base, unjointed, with fine marginal spinules; outer seta about one-third length of ramus, swollen at base and densely plumose. Antennule 7-segmented, the usual apical segment fused with 7. Leg 1 with 3-segmented endopod, first segment reaching to about middle of exopod segment 3. Legs 2-4: exopod segment 3 with 3 outer spines, the total number of spines and setae: 6,7,6; endopods 2-segmented, first segment of legs 2-3 with inner seta, apical segment with total number of setae: 3,4,3. Leg 5 like that of *A. idahoensis*; exopod elongate, its length about 5.5 times its greatest width; basal expansion prolonged into similar narrow portion that reaches to near the end of the exopod; both armed with 6 short setae, ranging in length from less than to a little more than width of segment. Total body length about 1.0 mm.

*Remarks:* Although only two specimens of one sex are available,

there is no question about the specific status of this copepod. The fifth leg cannot be distinguished from that of *A. idahoensis*, but the two species have strikingly different caudal rami. Coker (1934) has clarified some of the confusion in Marsh's (1903) description of *idahoensis*, but comparison with Alaskan specimens indicate that the type form of the species is still inadequately defined as regards the spinal formula of legs 2-4. *A. idahoensis* has been collected in Alaska near Anchorage, from moss on a roadside cliff over which a melt water stream from the Chugach Mountains was flowing.

***Bryocamptus washingtonensis*, new species**

*Specimens examined*: Type lot, 13 ♀ (7 ovigerous), 2 ♂, pond, 1 mile north of Kent, King Co., Washington, Feb. 1 and Mar. 14, 1954, J. E. Lynch, collector. 1 ♀, ovigerous, from among weeds of seasonal roadside ditch pond, about 3 miles south of Corvallis, Benton Co., Oregon, Mar. 8, 1954, M. S. Wilson and A. R. Roth, collectors.

*Diagnosis*: Subgenus *Bryocamptus*; with characters of *B. minutus* group (as defined, Lang 1948). Anal operculum with 8 large, non bifid spinules. Caudal ramus of female longer than anal segment and about 2.3-2.8 times its own greatest width, outer apex without distal spinous process; inner margin with distal group of stout spinules arranged in 2-3 rows. Caudal setae inserted at apex of ramus, both outer and middle setae jointed at bases. Caudal ramus of male like that of female but shorter (about 2-2.3 times width). Antennule of female 8-segmented. Mandible palp 2-segmented. Legs 2-4: exopod segment 3 with 3 outer marginal spines, the total number of spines and setae: 6,7,7; apical segment of endopod with total of 4,5,5 setae in female, that of leg 4 with 4 setae in male. Leg 5 of female, exopod with 5 setae, of which the second is extremely long, being more than 2 times the length of the first seta which is placed at the middle of the segment; basal expansion produced beyond middle of exopod segment, with 6 setae of which the fifth is the longest. Leg 5 of male, exopod with 6 setae, basal expansion produced to near end of exopod, with 2 very stout, subequal spines. Total body length of both sexes: 0.68-0.77 mm.

***Bryocamptus umiatensis*, new species**

*Specimens examined*: Arctic slope of Alaska, E. B. Reed, collector: Type lot, 11 ♀, 3 ♂, seep water on terrace above Seabee Creek, Umiat, June 18, 1955; 1 ♂, lake at Umiat, June 19, 1955; 1 ♀ and 1 ♂, separate pools in area of junction of Kurupa and Colville Rivers, July 1 and 3, 1955.

*Diagnosis*: Subgenus *Bryocamptus*. Caudal ramus of both sexes with length subequal to anal segment and about equal to its own width, without ornamentation; outer and middle caudal setae enlarged basally, both jointed. Anal operculum with 3-5 widely spaced spinules in female, with 8 in male. Antennule of female 8-segmented. Mandible palp 2-segmented. Leg 1, exopod segment 2 with inner seta; endopod 3-segmented, reaching beyond exopod by about half length of segment 3, endopod segments 1 and 2 with inner setae. Legs 2-4: exopod segment 3 with 3 outer spines, total number setae and spines: 6,7,7; endopod of female legs 2 and 3, 3-segmented; of leg 4, 2-segmented;

apical segments with total number of setae: 4,5,5. Leg 2 of male, endopod 2-segmented; segment 1 with inner seta; segment 2 with characteristic outer marginal notch, with 2 short inner setae and 2 closely set terminal setae, placed subapically on inner side. Leg 3 of male, endopod armed apically with extremely stout, long seta about 3 times the length of total endopod; and with a modified seta about as long as endopod, stout at base and divided into 2 apical processes by an incision that extends from apex to about the middle. Leg 4 of male, endopod segment 1 with inner seta and apical segment with 4 setae. Leg 5 of female, exopod segment oval in shape, with 5 setae; basal expansion irregularly produced to about middle of exopod, with 5 setae, the first extremely short and slender, prominent gap between setae 2 and 3. Leg of male, exopod with 6 setae; basal expansion with very short outer seta and much longer inner seta. Total body length of both sexes: 0.65-0.68 mm.

*Remarks:* This species has the caudal ramus and leg 5 of the female similar to those of *B. tarnogradskyi* Borutzky, from the Caucasus Mountains of southeastern Europe. It differs from this and all other species of *Bryocamptus* in the unusual modification of the apical setae of the endopod of the male third leg. This does not appear to be an anomaly inasmuch as it occurs symmetrically on each leg of the pair, and is present in specimens collected from separate pools and areas.

#### *Paracamptus reggiae*, new species

*Specimens examined:* Type lot, 13 ♀ (2 ovigerous), 3 ♂, from vegetation at edge of small bog pond, about Milepost 38, Steese Highway, northeast of Fairbanks, east central Alaska, July 15, 1955, M. S. Wilson, collector. 1 ♀, from vegetation of shallow pool, Saint Matthew Island, (Bering Sea) Alaska, Sept. 2, 1954, R. and R. Rausch, collectors.

*Diagnosis:* Caudal ramus of female shorter than anal segment (about 13:18) and about twice its own greatest width; with inner and outer marginal hairs and a basal crosswise crest of very fine, short hairs. Caudal ramus of male shorter than that of female, about half of the length of the anal segment. Stout middle caudal seta longer than urosome (including somite of leg 5) in both sexes. Leg 1, endopod reaching beyond exopod by nearly the length of second segment; segment 2 armed apically with elongate spine and much longer seta. Legs 2-4: exopod segment 3 with 5,5,4 spines and spiniform setae; endopods of female 2-segmented, the apical segment with extremely short outer seta and longer inner seta; apical endopod segment of male legs 2 and 4 with short outer seta and 2 elongate spiniform setae. Leg 3 of male, endopod with single apical seta modified, broadened throughout and with tip flattened and expanded. Leg 5 of female with the third seta of exopod not different from the other setae, being of similar stoutness and ornamentation, subequal to or longer than the innermost seta. Leg 5 of male, third seta of exopod plumose and stout like other setae but shorter than the second and fourth setae; basal expansion with 2 setae, the innermost nearly twice the length of the outer and exceeding the length of the longest exopod seta. Total body length: ♀ 0.68 mm. ♂ 0.6 mm.

*Remarks:* This species closely resembles the European *P. schmeili* (Mrazek) from which it differs principally in having the third exopod seta of the fifth leg of both sexes similar in stoutness and ornamentation to the other setae. The species is named for Mrs. Reggie Rausch who patiently collected many harpacticoids on Saint Matthew Island.

**Mesochra alaskana**, new species

*Type lot:* 25 ♀ ♂, Naknek Lake, Alaska Peninsula (about lat. 59°N., long. 156°W.), Alaska, surface tow, Sept. 2, 1949, G. Eicher, collector. Also collected abundantly in fresh water lakes on Adak Island, Aleutian chain (Everett Schiller and Robert Rausch, collectors), and in Matanuska Valley near Palmer, Alaska (C. S. Wilson, collector).

*Diagnosis:* Habitus and appendages of both sexes, except leg 1, very similar to *M. rapiens* (Schmeil). Urosome spination differing ventrally from *M. rapiens* in that all spinules are enlarged to similar size, and arranged in small groups of 2-5. Anal operculum of both sexes with spinules. Caudal ramus about as long as broad, outer distal margin constricted; middle caudal seta enlarged basally for about one-fifth of its length. Antennule of female 7-segmented. Leg 1 of both sexes, endopod 3-segmented, the first segment reaching considerably beyond the exopod, ratio of its actual length to that of total exopod about 1.26:1; relative length of endopod segments to one another 38:5:9. Other legs, including modified leg 3 of male, very similar to those of *M. rapiens*, except that the length of the exopod of the male fifth leg is about twice its width.

*Remarks:* This form differs strikingly from *M. rapiens* in the development of the endopod of the first leg, both as described from brackish and fresh water bodies of Europe and as observed on the Bering Sea coast of Alaska. In descriptions and in keys in the literature, the first segment of the endopod of *M. rapiens* is indefinitely spoken of as reaching beyond or as being about as long as the exopod, but its actual length is much less since the attachment of the two rami is at distinctly different levels on the basal segment. In Alaskan specimens of *M. rapiens*, the ratio of the actual length of the endopod to the total exopod is about 0.79:1, and endopod segments 2 and 3 are subequal to one another. Since the two forms are so similar in other ways, it is admittedly questionable whether the status of the new Alaskan form, confined in present knowledge to fresh water, is that of a full species. Such status is given here because the length of the endopod of the first leg, and particularly of the first segment, constitutes one of the primary characters differentiating species of the genus.

FAMILY CLETODIDAE

**Huntemannia lacustris**, new species

*Type lot:* 38 ♀ (3 ovigerous), 29 ♂, Bear Lake, Utah, horizontal haul in shallow water, July, 1957, W. J. Clark, collector.

*Diagnosis:* Habitus and appendages of similar structure and armature to *H. jadensis* Poppe. Caudal ramus about same length as anal segment, second outer lateral seta placed near middle. Caudal setae of female consisting of stout middle spinous production as long as or longer than ramus; the inner seta articulated, slender; the outer setiform and

more or less set off from ramus, with basal portion enlarged and distal half attenuated, reaching to middle of spinous process or beyond. Caudal setae of male similar to those of *H. jadensis*, with stout middle spine twice the length of ramus or more; inner seta as in female; the outer a stout spinous process with incurved apex, as long as the ramus. Leg 1, exopod segments 2-3 fused or separate; endopod 1-segmented with 2 stout spines. Legs 2-4 of female, exopod segment 2 with 5,5,6 or 5,6,6 total spines and setae; endopod of legs 2-3 of a single reduced segment with 1 or 2 setae (the innermost reduced); endopod of leg 4 papilliform with a single long seta. Legs 2-4 of male, exopod segment 2 with 5,8,7 spines and setae; that of leg 3 modified, with 3 outer spines and 5 setae, the first two spines short, subequal to one another, the first stoutly serrate on outer margin, the second with coarse spinulations on each side; the third spine elongate; relative length of segment (outer margin) and spines: 9:5:6:17; endopods as in female, those of legs 2-3 with 2 setae, both well developed in leg 3; endopod of leg 4 with single long seta. Leg 5 of female, exopod length 2 times its width, with 5 setae; basal expansion with 4 setae, the innermost much stouter than the others. Leg 5 of male, both exopod and basal part a narrow lamina, each with 4 setae; leg 6 with 3 stout setae. Total body length: ♀ 0.8-0.86 mm. ♂ 0.7-0.95 mm.

*Remarks:* This is the first record of the genus *Huntemannia* from fresh water. The occurrence in Bear Lake is of particular interest because the lake is situated far inland, on the eastern slope of the Wasatch Mountains at an elevation of about 6,000 feet. *H. lacustris* occurred in association with the euryhaline species, *Mesochra rapiens* (Schmeil), and the fresh-water copepods, *Epischura nevadensis* Lilljeborg and *Canthocamptus robertcokeri*, described above.

*H. jadensis* Poppe is known only from marine habitats on the northern coast of Europe. *H. lacustris* differs from it principally in having the outer caudal projection of the female developed as an elongate seta instead of a short spinous spur; in the greater development of the exopod of the female fifth leg; in the relative size of the exopod spines and endopod setae of the third leg of the male; and in having 7 instead of 6 spines and setae on the second exopod segment of the fourth leg of the male.

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